

Scope of Work

Water Resources Information Assessment Great Lakes Inventory & Monitoring Network National Park Service

Problem Statement

The Great Lakes Inventory and Monitoring Network (GLKN) is in the initial stages of designing a long term monitoring program for nine National Park Service (NPS) units in four states around the western Great Lakes. During this initial stage GLKN must locate and assess available information, identify and summarize current monitoring, and develop lists of potential indicators for critical resources including surface and ground water.

This scope of work (SOW) outlines the tasks and individuals responsible for assessing available information and developing initial lists of potential indicators for long term monitoring of aquatic resources in the Great Lakes Network.

Tasks to be Accomplished

Task 1:

Review and synthesize all available reports and data on research and monitoring of aquatic resources conducted in the nine Network parks. This review will include as a starting point the "Horizon Reports" provided by the NPS Water Resources Division. These reports are available for most Network parks and include a compilation of water quality data from several agencies as well as GIS themes that should be of value to each park. While the Horizon Reports are a good starting point, there are many additional reports and data sets that need to be reviewed and synthesized.

Two synthesis reports will result from this effort: one specifically addressing fisheries work and one for all other aquatic studies including toxicological work. Each synthesis report will include an Executive Summary, an Introduction that provides the objective and a brief description of each park (more in-depth reviews can be cited), Methods of inquisition, Results and Discussion, an annotated list of Recommendations for both Management and Long-term Monitoring, and Literature Cited. The executive summaries (2 to 4 pages) will be stand alone products for inclusion in the Network's monitoring plan.

Responsible individual(s): Jay Glase (MWR fisheries biologist stationed at ISRO) will complete the fisheries synthesis and Brenda Moraska Lafrancios (MWR aquatic ecologist stationed at SACN) will complete the aquatic research synthesis. [Note: We hope to hire four data specialists to catalog data sets and reports on all natural resources specific to the nine parks. These data specialist will work collaboratively with Jay and Brenda to uncover and document aquatic resource information.]

Timeframe: Jay and Brenda began library searches at Network parks in early November 2002. We estimate this task to be completed by July 30, 2003.

Estimated cost: **\$2,000.** The Network will cover travel expenses for Jay and Brenda and any misc. costs associated with acquiring and photocopying important documents that should be available to the Network office. The Midwest Regional Office is covering the salary and benefits for Jay and Brenda (estimated at 25% of FY2003 annual wage).

Task 2:

Review and summarize NPS mandates, EPA guidelines, requirements under the U.S. / Canadian Great Lakes Water Quality Agreement, and specific State and Provincial water quality standards and criteria for chemical, biological, and physical parameters pertaining to water resources in the nine NPS units in the Great Lakes Network. Where possible the author will provide specific examples of water quality parameters that are critical for parks to monitor. Further, the summary should support (or perhaps in some cases reject) the need for measuring water quality using the same parameters and procedures as

local, regional, state, or other federal agencies. The summary should make a strong argument for the use of water quality indicators (in general) to assess whether the NPS is meeting its legal and policy obligations. We expect this summary will be ten pages or less, but it must include a table or appendix listing water quality standards and criteria for all parameters monitored by those states where network parks reside (MN, WI, MI, IN). This information must also be provided in an MS Access database or MS Excel spreadsheet. Finally, the author will provide a bibliography of important references for general water quality monitoring as well as specific protocols that the Network should be aware of.

Responsible individual(s): Tracey Ledder (private contractor, Mason WI) will complete Task 2. Tracey has experience as a water resource professional including work as an analytical chemist, project coordinator for evaluating potential Superfund sites, watershed monitoring, microbiology, and technical writing. Ulf Gafvert, GLKN data manager, will help design the MS Access database.

Timeframe: This task will be completed by February 28, 2003.

Estimated cost: **\$1,490.** A small contract (Purchase Order) will be developed for this element.

Task 3:

Prepare a Scope of Work for a much larger project, which at a minimum will include the following for water bodies in or immediately adjacent to the nine parks:

- Evaluations of current and historical water quality data. This evaluation should include trends in water quality parameters, including chemical, physical, and biological elements.
- GIS themes that show the following:
 - Spatial trends or hot spots for various water quality indicators. For example, areas with lakes of high or low pH, heavy metal contamination, or pesticide pollution.
 - Location of all legally designated 303d water bodies and Outstanding Natural Resource Waters (ONRWs), as well as waters known or suspected to be pristine but not yet officially designated as ONRWs. All water bodies, their official names, legal designations, and geographic coordinates will be provided in an MS Access database that integrates with ArcView GIS. This database will also list why each 303d-water body is impaired.
 - Extent of invasion by exotic plants and animals. This should include current and past locations of known populations of important invasives such as sea lamprey, zebra mussel, rusty crayfish, alewife, Eurasian watermilfoil, narrow-leaf cattail, ruffe, round goby, spiny water flea, and purple loosestrife. An accompanying database should provide date of first known colonization, extent and rate of spread, and current monitoring and control efforts by various agencies and organizations.
 - Locations of monitoring sites that are significant to aquatic resources. This should include stream flow gauging stations, lake-level monitoring sites, and water chemistry monitoring sites.
 - Location of known point and non-point sources of water pollution.
 - Locations of ground water test sites and spatial trends or hot spots in ground water contamination.
 - Maps for the region surrounding each park showing current and important historical land use patterns, political boundaries, road density, population density (county block census data), percent impervious soils, major population centers, and land ownership.

Responsible individual(s): Tracey Ledder (private contractor, Mason WI) will complete Task 3.

Timeframe: To be completed by March 30, 2003.

Estimated cost: **\$1,000.** A small contract (Purchase Order) will be developed for this element.